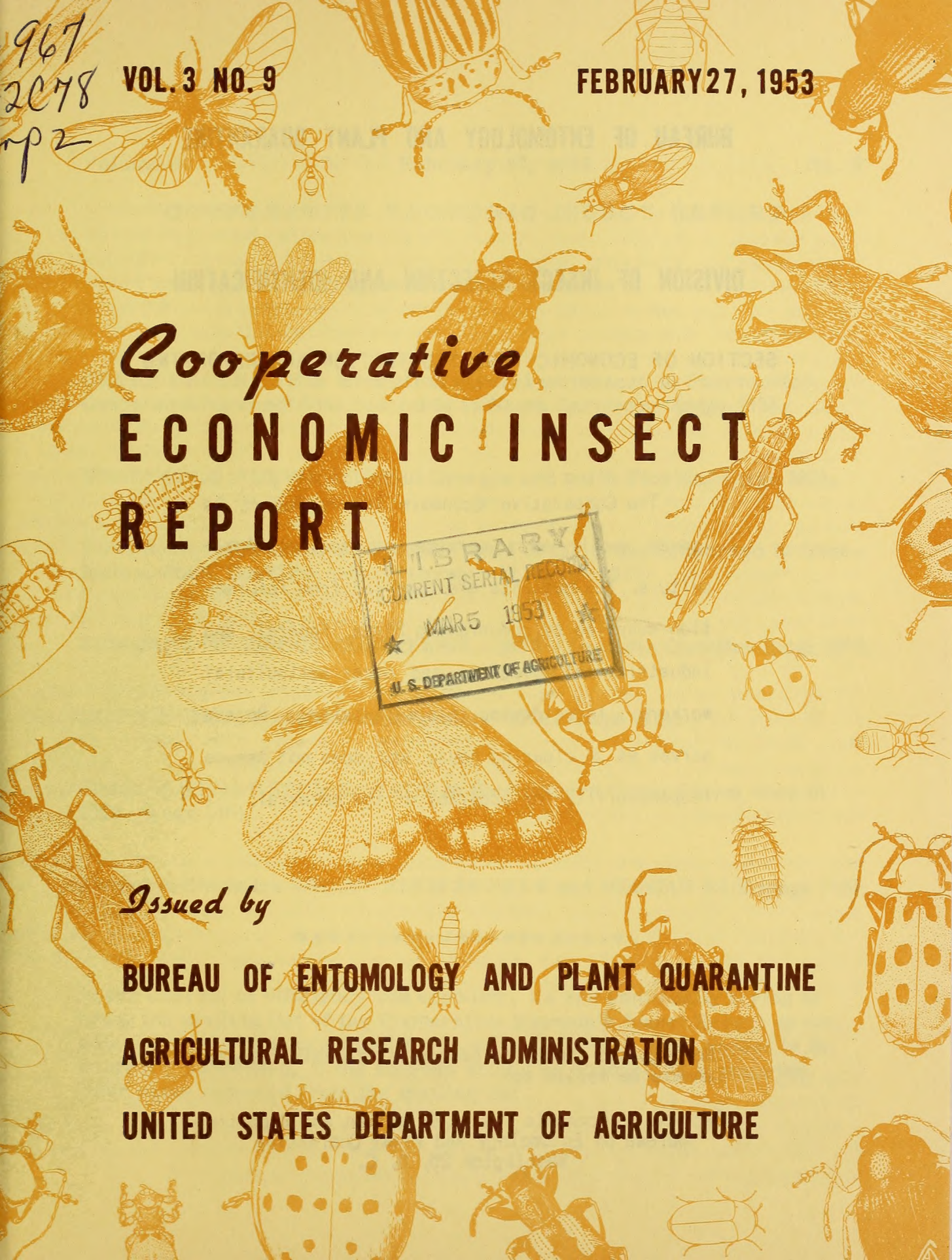


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VOL. 3 NO. 9

FEBRUARY 27, 1953

Cooperative **ECONOMIC INSECT REPORT**

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**BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
AGRICULTURAL RESEARCH ADMINISTRATION
UNITED STATES DEPARTMENT OF AGRICULTURE**

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

DIVISION OF INSECT DETECTION AND IDENTIFICATION

SECTION OF ECONOMIC INSECT DETECTION AND REPORTING

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Bureau serves as a clearing house and does not assume responsibility for accuracy of the material.

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Section of Economic Insect Detection and Reporting
Bureau of Entomology and Plant Quarantine
Washington 25, D. C.

COOPERATIVE ECONOMIC INSECT REPORT**Highlights of Insect Conditions**

GREEN PEACH APHID infestation general on tobacco in Puerto Rico.

Overwintering conditions favorable in North Carolina. (page 133).

VEGETABLE WEEVIL active in Georgia and north Florida. (page 133).

First adult IMPORTED CABBAGEWORM of the season observed in Charleston, South Carolina area, February 17. (page 134).

SUMMARY OF INSECT CONDITIONS - 1952 - in North Carolina (page 137).

COTTON INSECT conditions in Texas - 1952. (page 138).

Status of WHEAT STEM SAWFLY in the northern Great Plains area in 1952. (page 140).

Survey methods for WHEAT STEM SAWFLY and HESSIAN FLY (page 143).

In the interest of efficiency and economy, we are continually trying to bring the mailing list of the Cooperative Economic Insect Report up-to-date. It would be appreciated if you will advise us if your Report is incorrectly addressed, if the address should be changed or if you wish your name removed from the mailing list.

WEATHER FOR THE WEEK ENDING FEBRUARY 24, 1953

The main features of the week's weather were the conditions that occurred from the 18th to the 21st, as an area of low pressure that developed storm intensity over the southwest, moved northeastward across the Great Plains and Lake Regions. In the lower parts of the western Great Plains where the soil was dry and loose as a result of the fall drought of 1952 and inadequate moisture this winter, high winds caused dust storms that in many sections were the worst since the 1930's. Winds ranged up to 55 miles per hour for a period of 12-18 hours in central and western Kansas. In northwestern Texas and the western portions of Oklahoma and Kansas the winter wheat crop was damaged, soil moisture further depleted, and visibility at times reduced to near zero. Farther north in an area extending from eastern Colorado and Wyoming to upper Michigan, the worst blizzard of the current winter occurred on the 19th and 20th. Heavy snow falls with depths up to 20 inches in South Dakota, 11 inches in Nebraska and 10 inches in Iowa occurred during this storm, and was blown into high drifts by winds that reached 64 miles per hour at North Platte, Nebraska. Throughout the area, highway traffic was halted, railway traffic delayed, many travelers stranded, and some communities isolated. Freezing rain preceded the snow in some sections of central Nebraska where power and communication lines were damaged by a heavy load of ice.

As the storm center neared the Lake Region on the 20th, thunder storms and heavy rains occurred in the Mid-west and South. Sections of Alabama, Mississippi, and Louisiana, were struck by tornadoes or severe wind squalls. In northern Alabama, one person was killed, at least 7 persons injured and several homes were damaged or destroyed. The heavy rainfall caused some minor flooding in Southern Wisconsin.

The week was unseasonably cold in the southwest where some station averages for the week were 10 degrees below normal. Some tender vegetables were nipped in the lower portions of California's Central Valley when a minimum temperature of 22 degrees was recorded in the Fresno area, on the 21st unheated citrus was damaged in the Los Angeles area and tender vegetables and early-set fruit in the San Diego area also suffered some damage.

Temperatures fluctuated frequently in north central areas with periods of sub-zero minimums at the beginning of the period and over the weekend. On the 17th International Falls, Minnesota recorded -22 degrees and Des Moines, Iowa -3 degrees while on the 21st sub-zero minimums were recorded from Havre, Montana to Duluth, Minnesota and as far south as Goodland, Kansas. Also on the 21st, below freezing temperatures extended to central Texas, but damage was expected to be light. (Weather Report Continued on page 136)

CEREAL AND FORAGE INSECTS

LUPINE MAGGOT (Hylemya lupini) - FLORIDA - Second generation in Gadsden County area about ready to pupate. (F. E. Guthrie).

LYGUS BUGS (Lygus hesperus and L. elisus) - CALIFORNIA - Continue in unusually large numbers on alfalfa and various weeds in southern California. Warm weather has resulted in an unseasonable abundance of vegetative growth and early blossoming. Small lygus nymphs first appeared in fields on February 3; fifth instar nymphs observed February 18. (R. E. Campbell).

TRUCH CROP INSECTS

GREEN PEACH APHID (Myzus persicae) - NORTH CAROLINA - Condition have been favorable so far this winter for the growth of cultivated host crops as well as for the survival of these aphids. (Lawson and Jones). PUERTO RICO - Green peach aphid began appearing on tobacco by the latter part of January, infestations being especially obvious in the shaded areas of fields. By mid-February infestations were general in all parts of every field examined and at all localities in which tobacco is grown. In one field only were endemic lady beetles, Cycloneda sanguinea, noted. Mass infestations are as general as during the winter of 1950-51 and 1951-52. (G. N. Wolcott).

POTATO APHID (Macrosiphum solanifolii) - PUERTO RICO - Again abundant this year on tomatoes at the hydroponics farm between Toa Alta and Toa Baja. Mass infestation on tomatoes first observed in Puerto Rico in the winter of 1950-51 (coincident with the first appearance of green peach aphid on tobacco in Puerto Rico). (G. N. Wolcott).

APHIDS (Aphidae) - SOUTH CAROLINA - Turnip aphid (Rhopalosiphum pseudobrassicae) is somewhat more numerous than usual in some recently transplanted cabbage in Charleston area. (W. J. Reid). FLORIDA - Species, which have been unusually abundant on cabbage and other crucifers throughout northwestern Florida, have decreased in numbers due to natural enemies. (L. M. May). CALIFORNIA - Unidentified aphids moderately infesting 15 acres of lettuce at Talbert in Orange County. Cabbage aphid (B revicoryne brassicae) decreasing on cabbage in Orange County. (R. E. Campbell).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Damaging turnips in Treutlen County, February 3, (C. R. Jordan). Feeding on

50 acres of spinach in Tift County, February 9, (L. W. Morgan). Larvae damaging roots and foliage of turnips in Jasper County, February 2, (J. H. Milner). FLORIDA - More prevalent than usual in Gadsden and adjacent counties. Infestations occur on turnips, Chinese cabbage and tobacco plant beds. All stage of the insect present and newly emerged adults can be found in considerable numbers. (L. M. May).

CUTWORMS - SOUTH CAROLINA - Soil-inhabiting species causing slight injury in some commercial plantings of cabbage in Charleston area. Moderate damage noted in a 5-acre field of beets. (W. J. Reid).

IMPORTED CABBAGEWORM (Pieris rapae) - SOUTH CAROLINA - First adult of season noted in cabbage field February 17 in the Charleston area. Specimen was laying eggs. (W. J. Reid).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - GEORGIA - Damaging foliage of spinach in Tift County, February 9. (L. W. Morgan).

SEED-CORN MAGGOT (Hylemya cilicrura) - CALIFORNIA - Fifteen-acre planting of snap beans destroyed at Oceanside, San Diego County. (R. E. Campbell).

STRAWBERRY APHID (Capitophorus fragaefolii) - CALIFORNIA - Decreasing on strawberries in Orange County, probably due to warm weather. (R. E. Campbell).

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - CALIFORNIA - Populations increasing on strawberries in Orange County. (R. E. Campbell).

COTTON INSECTS

Boll Weevil Hibernation Survey: SOUTH CAROLINA - The 1952 fall hibernation survey in Florence County showed an average of 8, 113 live boll weevils per acre of trash as compared to a low record of 1, 573 in 1951. The average for this county was 4, 816 in 1950 and 10, 744 in 1948. Average numbers of live weevils found in the 1952 fall hibernation survey in other South Carolina counties: Dorchester 1, 646; Clarendon 4, 477; Laurens 7, 329; Orangeburg 3, 968; Sumter 7, 357; Darlington 5, 324. (C. E. Jernigan).

A BORER (*Pyrausta penitalis*) - CALIFORNIA - Collected from gin trash in the Bakersfield area, December 2, 1952. There would appear to be no basis for considering this insect of economic importance, but its occurrence in association with cotton, and for the first time in California, would seem of interest. This insect was also collected from rhubarb in San Bernardino County January 20, making a second record for the State. (H. M. Armitage).

FOREST INSECTS

A PINE LEAF SCALE - UTAH - Causing damage in some cases where infestation was heavy in pine at Salt Lake, American Fork, Draper, Ogden and Logan. (G. F. Knowlton, January 31).

INSECTS AFFECTING MAN & ANIMALS

Livestock Pest Situation in Kerrville, Texas Area: SCREW-WORM (*Callitroga americana*) infestations have occurred throughout the winter and there are indications that this insect overwintered at least as far and perhaps farther north than in the winter of 1951-52. CATTLE GRUBS (*Hypoderma* spp.) - Heel fly activity has been quite general for the past two or three weeks. WINTER TICK (*Dermacentor albipictus*) infestations were very general in horses and cattle in this area during the winter. No serious infestations were reported, however. Decreasing at present. A few nymphs of LONE STAR TICK (*Amblyomma americanum*) were observed on cattle recently; however, very little activity can be expected until continuous warm weather (C. L. Smith). A heavy infestation of HORN FLY (*Siphona irritans*) was observed in a herd of cattle near San Antonio February 15. (W. S. McGregor)

Recent Important Interceptions at Ports of Entry

Living larvae of *Laspeyresia leguminis* Hein., a bean pod borer, were intercepted recently in ship's stores from Mexico at Brownsville (F. A. Allen). This insect has been reported causing extensive damage to beans in Peru. It attacks soy, lima, and string beans. It has been intercepted occasionally in recent years in string beans from Mexico at various border ports.

Living larvae of *Leucinodes orbonalis* Guen., an eggplant fruit borer, were intercepted recently in eggplant in ship's stores from the Cape Verde Islands

at Baltimore (M. G. Vinzant). This insect is considered a serious pest of eggplant in India and Ceylon and of some importance to potato in the Belgian Congo. It also attacks cape gooseberry and several other solanaceous plants. It occurs in parts of Africa, Asia, Malaya, and the Philippines, apparently preferring a tropical climate (R. G. Oakley).

Neither of these insects is known to occur in the United States.

(Weather cont'd) -- A freeze that caused little damage occurred in the Southeast on the 18th (Mobile, Alabama 32 degrees and Alma, Georgia 28 degrees) but moderate temperatures prevailed during the remainder of the period. In contrast, unseasonably high temperatures extended northward to the Lake Region on 20th when Detroit, Michigan had 56 degrees and northward along the Atlantic Coast to New York and New England on the 21st with Albany and Buffalo, New York recording 61 and 65 degrees respectively.

Precipitation totals for the week ranged from 1 to 4 inches in Central Gulf areas and the ground is too wet to work south of the Ohio River. Weekly totals exceeded 1/2 inch in the Lake Region and Ohio Valley and extreme eastern portion to the Great Plains, except along the Northern border, southern South Dakota and most of Nebraska. In the region of the Great Plains and in the Far West except along the northern Pacific Coast totals were generally less than 1/4 inch. Deep snow still covered the ground in upper Mississippi Valley and upper Great Lake Region at the end of period. (Summary Supplied by U. S. Weather Bureau).

SUMMARY OF INSECT CONDITIONS - 1952

NORTH CAROLINA

Reported by G. D. Jones

It is estimated that some 100 to 200 different insect pests had to be controlled during 1952 in the protection of the billion dollar (cash value) agricultural industry in the State. Weather factors retarded the boll weevil, which is usually the Number One insect pest, to such an extent that it did only moderate damage. Tobacco insect control required more use of insecticides than did the cotton insect control work.

Cereal and Forage Insects: EUROPEAN CORN BORER (Pyrausta nubilalis) was found on most mountain counties but the infestations did not appear as heavy as during 1951 when it was first reported from Watauga County. GRASS-HOPPERS, mostly Melanoplus differentialis, did extreme localized damage to corn, tobacco, hay and garden crops in the mountain counties where drought conditions were very acute. CORN EARWORM (Heliothis armigera) and FALL ARMYWORM (Laphygma frugiperda) were serious pests on soybeans, late vegetables and field crops. The corn earworm was so numerous that it was a foliage pest on peanuts, chrysanthemums, soybeans and ladino clover. ARMYWORMS (fall armyworm and cutworms) showed up in a few localized areas. CHINCH BUGS were a minor problem in two widely separated areas in the State. There was heavy marginal damage to a few fields of corn when the pests moved from small grain fields. GREEN JUNE BEETLE (Cotinis nitida) was reported from a number of places in the State. Damage from the feeding of the adults on various trees, shrubs and other plants was reported several times. The larvae did considerable damage to lawns, golf courses, pastures and certain other grassy areas.

Fruit Insects: Various SCALE INSECTS were abundant on shrubs and ornamental plants. Oyster shell, scurfy and Forbes scale were abundant in certain orchards. JAPANESE BEETLE (Popillia japonica) continued to spread and cause some localized damage to certain crops, fruits and shrubs.

Vegetable Insects: MEXICAN BEAN BEETLE (Epilachna varivestis) and VEGETABLE WEEVIL (Listroderes costirostris obliquus) were unable to survive the dry weather and were less numerous than usual. Various APHIDS were not the problem of former seasons.

Tobacco Insects: HORNWORMS (Protoparce spp.) attacked tobacco early in June and increased into the worst infestation ever experienced in the State. Growers applied more insecticides than ever before in protecting the tobacco crop.

Cotton Insects: BOLL WEEVIL (Anthonomus grandis) was not able to withstand the prolonged heat and drought conditions and as a result cotton growers had another year quite similar to 1951 and one in which the pest did only moderate damage. Many growers did not apply insecticides except as conditions seemed to justify it. As a result, less materials were used than during 1951. Neither BOLLWORMS nor SPIDER MITES were serious pests on cotton.

Forest Insects: C. F. Speers reports that CANKERWORMS defoliated approximately 14,000 acres of hardwood timber in Asheville vicinity and other western areas during May, 1952.

Insects Affecting Man and Animals: HOUSE FLY (Musca domestica) was the Number One pest in dairies and on many farms. Numerous reports indicated that the residual control program used since 1945 when DDT first became available broke down completely. Various LICE and FLIES were the main livestock pests.

Stored-Grain Insects: RICE WEEVIL (Sitophilus oryza) and CADELLE (Tenebroides mauritanicus) were important stored grain pests.

COTTON INSECT CONDITIONS IN TEXAS - 1952

Reported by K. P. Ewing & C. R. Parencia

Cotton insect damage in the State in general was not severe owing principally to conditions of extreme drought which occurred in most sections during the latter part of the growing season. In some areas damage from certain insects was heavy. ONION THRIPS (Thrips tabaci) caused injury to young cotton especially near onion fields in the Lower Rio Grande Valley and injurious infestations of thrips (Frankliniella sp.) occurred over a large area of Central and North Texas. When control measures were not used, delay in growth and fruiting resulted. COTTON APHID (Aphis gossypii)

infestations were heavy in the Upper Coastal Area early in the season but late-season infestations occurred only in occasional fields in a few areas of the State. Light to medium infestations of COTTON FLEAHOPPER (Psallus seriatus) occurred in the Upper Coastal, South Central, Central and northern areas. BOLL WEEVIL (Anthonomus grandis) infestations were extremely heavy in the Lower Rio Grande Valley and infestations in the other areas of the State where the insect occurs were about the same as that of 1951. COTTON LEAFWORM (Alabama argillacea) occurred over the entire State but owing to dry weather build-up was slow and infestations requiring control measures were confined to the more succulent fields in most areas. BOLLWORM (Heliothis armigera) damage was spotted in the central and northern areas with injurious infestations occurring in some fields. Injurious infestations were more general in the irrigated western areas. SPIDER MITE (Tetranychidae) infestations were generally light with the heaviest infestations occurring in the Pecos area. PINK BOLLWORM (Pectinophora gossypiella) infestation was severe in many southern counties. A few fields underwent damage ranging up to 90 percent and the average damage ranged from extremely light in some of the southern counties to as high as 26 percent in the southernmost county of Cameron.

STATUS OF THE WHEAT STEM SAWFLY IN THE NORTHERN GREAT PLAINS AREA IN 1952

Compiled and Summarized by E. G. Davis 1 /

Distribution in the Area

Search for the wheat stem sawfly (*Cephus cinctus* Nort.) in native grasses as well as in wheat in the Northern Great Plains area has been carried on from time to time during the spring, summer, or fall, since 1948. In 1952 the sawfly was found for the first time in 76 additional counties in Nebraska, in 40 more counties in South Dakota, and in 6 new counties in Wyoming.

These newly infested counties, totaling 122, were as follows:

<u>Nebraska</u>			<u>South Dakota</u>		<u>Wyoming</u>
Adams	Gage	Nemaha	Armstrong	Hyke	Albany
Antelope	Carden	Nuckolls	Aurora	Jerauld	Carbon
Arthur	Garfield	Otoe	Beadie	Kingsbury	Converse
Blaine	Gosper	Pawnee	Bon Homme	Lake	Fremont
Boone	Grant	Perkins	Brookings	Lincoln	Natrona
Boyd	Greeley	Phelps	Buffalo	Lyman	Niobrara
Buffalo	Hall	Pierce	Charles Mix	Marshall	
Burt	Hamilton	Platte	Clark	Melette	
Butler	Harlan	Polk	Clay	Miner	
Cass	Hayes	Redwillow	Custer	Minnehaha	
Cedar	Hitchcock	Richardson	Davison	Moody	
Chase	Hooker	Rock	Day	Roberts	
Clay	Howard	Saline	Deuel	Sanborn	
Colfax	Jefferson	Saunders	Douglas	Shannon	
Cuming	Johnson	Seward	Fall River	Spink	
Dakota	Kearney	Stanton	Grant	Stanley	
Dawson	Keith	Thayer	Hamlin	Turner	
Deuel	Keya Paha	Thomas	Hand	Union	
Dixon	Lancaster	Thurston	Hanson	Washabaugh	
Dodge	Lincoln	Valley	Hughes		
Douglas	Logan	Washington	Hutchinson		
Dundy	McPherson	Wayne			
Fillmore	Madison	Webster			
Franklin	Merrick	Wheeler			
Frontier	Nance	York			
Furnas					

1 / Field data obtained by personnel of project on wheat stem sawfly, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture.

Map 1 shows the known sawfly-infested territory - the counties in which infestation has been found to date in wheat and grasses or in grasses only. This territory now includes all counties in South Dakota and North Dakota, all counties in Montana east of the Rocky Mountains, all but 9 counties in Wyoming, all but 1 county in Nebraska, and 12 counties in the Red River Valley of northwestern Minnesota. Sawfly infestation has been found in wheat as well as in grasses in 40 counties outside of Montana and North Dakota, where wheat is the important host plant.

Infestation in Montana and North Dakota

A survey to determine the extent of the wheat stem sawfly infestation in wheat fields in North Dakota and in Montana east of the Rocky Mountains was made at the end of the 1952 harvest period. The data obtained served also as a basis for computing estimates of wheat losses due to sawfly damage.

The same survey method was used in 1952 as in 1951. Two samples were examined in each of 10 well-distributed wheat fields in each county. One sample was taken near the margin of the field within the first few drill rows, and the other at approximately the center of the field. At each location, 50 consecutive wheat stems of a drill row were examined for stubs cut off by the sawfly and a square foot of ground surface was examined for fallen wheat heads. The data from these examinations were then used in calculating the percentage of infested stems and the number of unharvested wheat heads per square foot for each field.

In 1952, as in 1951, the heaviest infestations were in northern Montana just east of the Rocky Mountains and in northwestern North Dakota. Although the approximate size of the area in which sawfly infestation was of economic importance did not change appreciably in the two years, the population level was 47 percent higher in 1952 than in 1951.

Map 2 shows the degree of infestation in 1952 in the two States and table 1 gives the 1952 data for the area in 1952 in comparison with figures for 1951. Infestation in individual fields in 1952 ranged as high as 80 percent.

Table 1. Wheat stem sawfly infestation in Montana and North Dakota in 1952, compared with infestation in 1951.

Number of fields surveyed		Percent of fields infested		Percent of stems injured		Estimated number of acres of wheat infested	
1951	1952	1951	1952	1951	1952	1951	1952
<u>Montana</u>							
408	394	20	34	12.9	11.3	1,182,000	1,946,685
<u>North Dakota</u>							
521	530	40	32	9.8	6.5	4,194,000	3,183,357

Estimated Wheat Losses in Montana and North Dakota

The sawfly decreases wheat yields in two ways. First, it weakens the stems by tunneling and thus causes a reduction in the weight of the grain. Second, it cuts off the wheat stems an inch or two above ground causing many of them with their heads of grain to fall over and be missed by harvesting equipment. Estimates of wheat losses caused by the sawfly in these ways in Montana and North Dakota in 1952 were calculated from data obtained during the survey and figures on wheat acreages and yields published by the Bureau of Agricultural Economics. ^{2/}

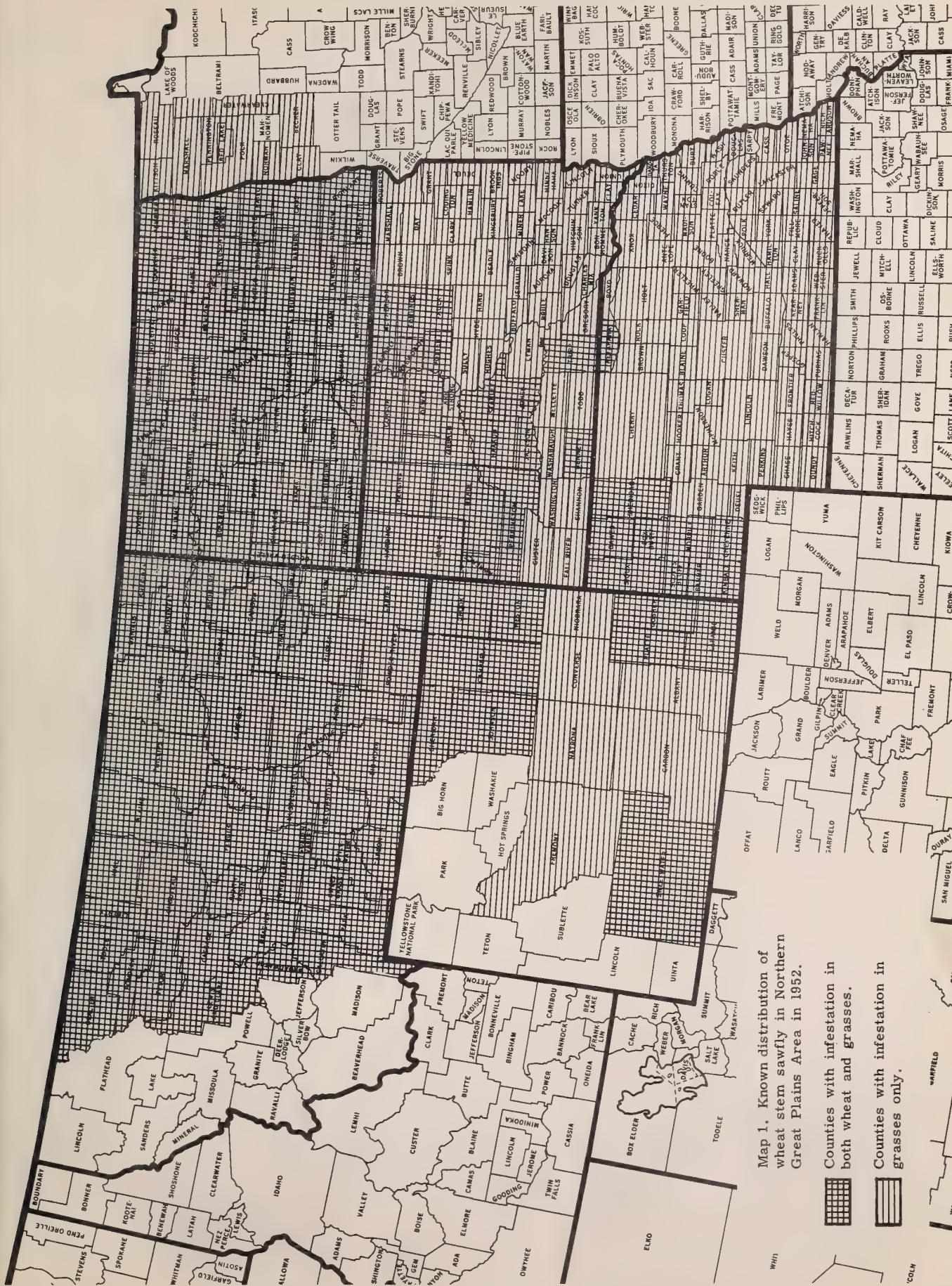
The estimates of bushel loss are given in table 2. Based on the prevailing prices of wheat in Montana and North Dakota ^{2/}, the estimated loss of almost 8 million bushels of grain represents a loss in money value of \$16,931,948.

Table 2. Estimated wheat losses caused by wheat stem sawfly in Montana and North Dakota in 1952.

State	Bushel loss due to tunneling	Bushel loss due to cut stems	Total bushel loss
Montana	545,777	1,705,296	2,251,073
North Dakota	424,012	5,220,705	5,644,717
Total	969,789	6,926,001	7,895,790

^{2/} Final Crop Estimates, Dec. 1, 1952. Montana Federal Agricultural Statistical Service, U.S.D.A., Bur. of Agr. Economics.

North Dakota Annual Crop Summary, Dec. 1952. USDA, BAE.

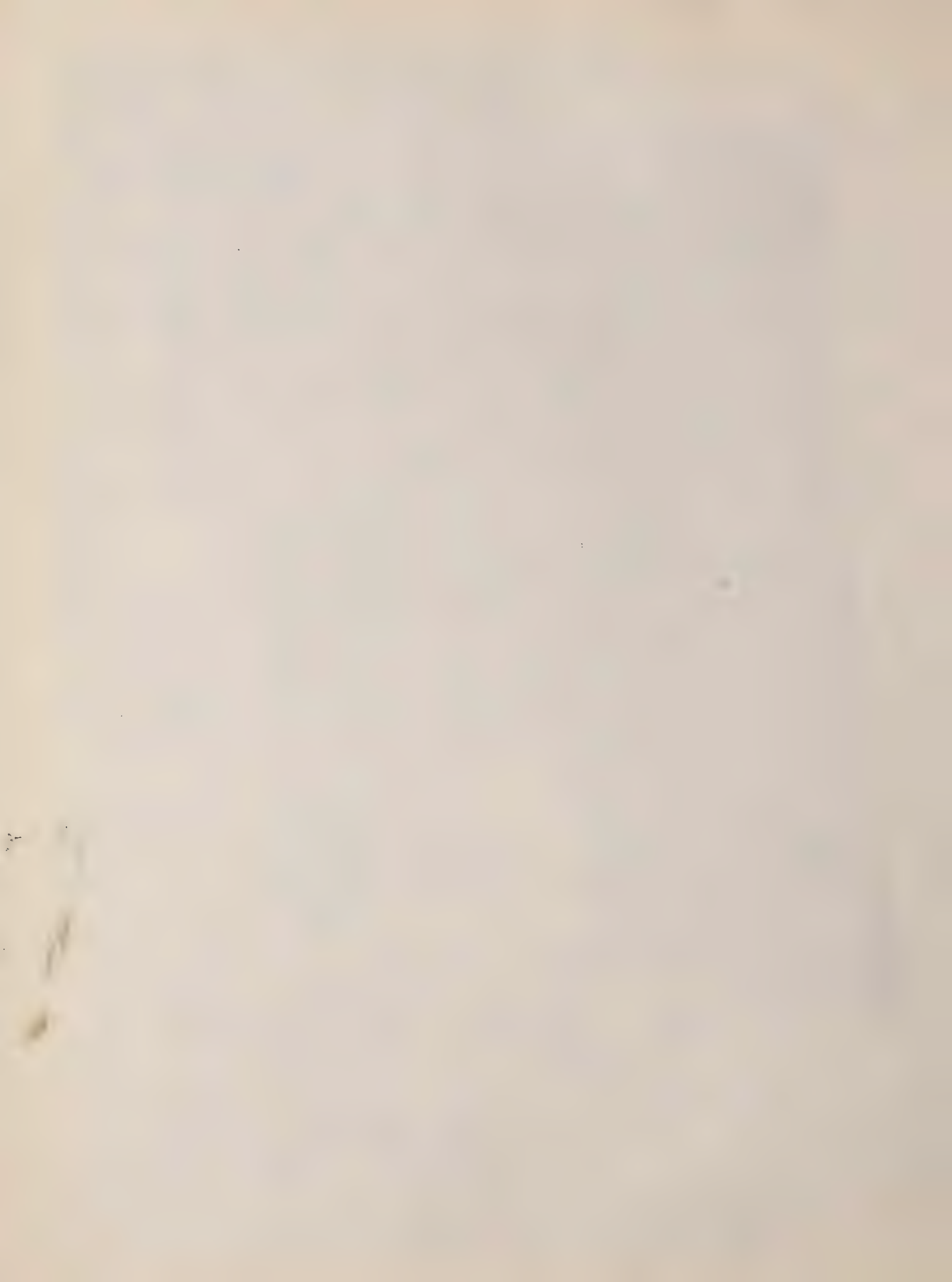


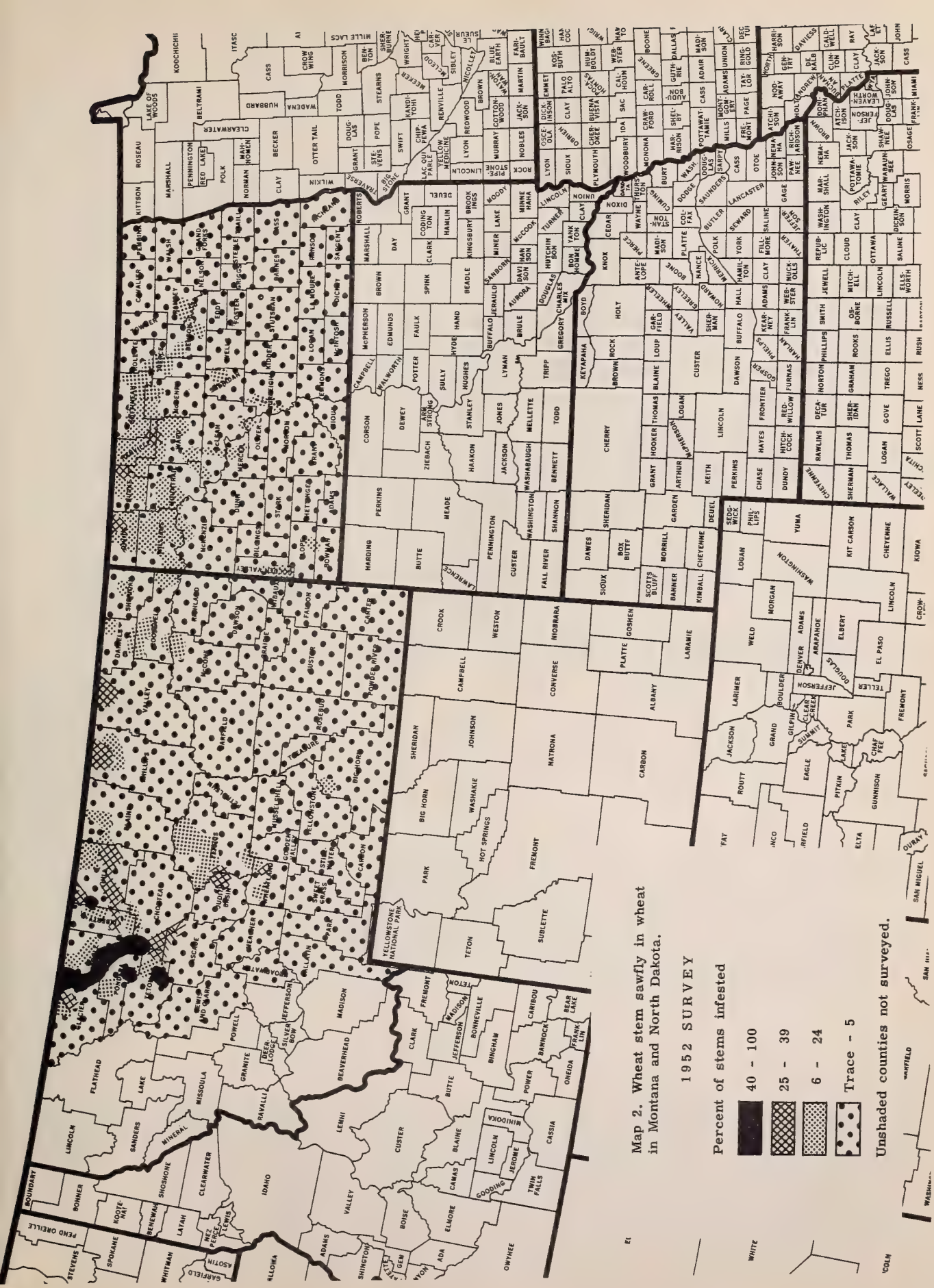
Map 1. Known distribution of wheat stem sawfly in Northern Great Plains Area in 1952.

- Counties with infestation in both wheat and grasses.
- Counties with infestation in grasses only.



WYOMING
MONTANA
IDAHO
UTAH
COLORADO

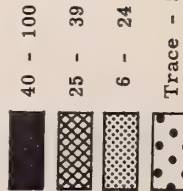




Map 2. Wheat stem sawfly in wheat in Montana and North Dakota.

1952 SURVEY

Percent of stems infested



Unshaded counties not surveyed.

SURVEY METHODS

WHEAT STEM SAWFLY

Wheat stem sawfly (Cephus cinctus) surveys are conducted at the conclusion of harvest in wheat fields in the northern Great Plains Area. The survey is made of the overwintering larval population by examining two samples in each of 10 well-distributed fields in each county. One sample is taken near the margin of the field within the first few drill rows, and the other at approximately the center of the field. At each sample location, 50 consecutive wheat stems of a drill row are examined for stubs cut off by the sawfly.

The total number of these sawfly stubs found in the two samples is recorded as the percentage of infestation for the field.

Upon completion of the survey, the fields are placed into one of four classifications based on their percentage of infestation, as follows:

<u>CLASSIFICATION</u>	<u>PERCENT OF STEMS INFESTED</u>
Light	Trace - 5
Moderate	6 - 24
Heavy	25 - 39
Severe	40 - 100

A map of the infestation is prepared by locating each classified field on a map of the surveyed region and delimiting the areas of different population abundance. The information obtained from the survey provides a basis for determining the extent of the infestation and makes certain data available that assist in making an appraisal of the wheat loss caused by the sawfly.
(E. G. Davis)

HESSIAN FLY

Surveys to determine infestations of hessian fly (Phytophaga destructor) are made annually near harvest time in the winter wheat region and in California. If there are relatively few reports of damage in May or June, the surveys may be limited or less intensively made in some areas or states. For an intensive survey, five or more samples of wheat are collected at separated points in each county surveyed. A sample consists of 50 stems of wheat

chosen at random from a larger sample pulled from a field of wheat. The percent of stems infested with puparia of the hessian fly is recorded for each sample along with location and date of collection. Often it becomes desirable to make examinations later at the field station. If so, the samples are placed in individual paper bags or tied with fine wire, labeled and stored in a dry place until examined. A county, an assembly of counties, or an area is rated on the average infestation recorded from the samples examined as follows:

<u>Average Infestation</u>	<u>Infestation Rating</u>
7.5 percent	Low
17.5 percent	Moderate
27.5 or more percent	Heavy

The ratings indicate whether low, moderate, or heavy populations of the fly exist in the wheat stubble and the need for publicizing control measures.
(W. B. Cartwright)

